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EXAMINER	
STAMPF, TIMOTHY R	
ART UNIT	**PAPER NUMBER**
2857	

DATE MAILED: 05/14/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Offic Action Summary	Application N .	Applicant(s)
	09/686,663	ALEXANDER, JAY A.
	Examiner	Art Unit
	Timothy R. Stampf	2857

-- The MAILING DATE f this c mmunication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on 11 October 2000 .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-51 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-29 and 44-51 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☒ Claim(s) 30-43 are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on 11 October 2000 is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Pri rity under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other:

DETAILED ACTION

Election/Restrictions

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:

   I. Claims 45-51, classified in class 702, subclass 79, drawn to a method for generating pulse data structures.

   II. Claims 2, 4-24 and 26-29, classified in class 702, subclass 80, drawn to controlling generation of a database defined by data structures.

   III. Claims 30-43, classified in class 707, subclass 104.1, drawn to a memory apparatus for storing a data structure.

   Claims 1, 3, 25 and 44 are deemed generic to the inventions of groups I and II.

2. The inventions are distinct, each from the other because of the following reasons:

The inventions of groups I and II are related as process and apparatus for its practice. The inventions are distinct if it can be shown that either: (1) the process as claimed can be practiced by another materially different apparatus or by hand, or (2) the apparatus as claimed can be used to practice another and materially different process. (MPEP § 806.05(e)). In this case the apparatus as claimed can be used to practice another and materially different process, specifically one which generates a database without indicating pulse type.

The inventions of groups I and III are related as process and apparatus for its practice. The inventions are distinct if it can be shown that either: (1) the process as claimed can be practiced by another materially different apparatus or by hand, or (2) the apparatus as claimed can be used to practice another and materially different process.

(MPEP § 806.05(e)). In this case the apparatus as claimed can be used to practice another and materially different process, specifically one which stores acquired data not related to pulse measurements.

The inventions of groups II and III are related as combination and sub-combination. Inventions in this relationship are distinct if it can be shown that (1) the combination as claimed does not require the particulars of the sub-combination as claimed for patentability, and (2) that the sub-combination has utility by itself or in other combinations. (MPEP § 806.05(c)). In the instant case, the combination as claimed does not require the particulars of the sub-combination as claimed, specifically being accessible by software.

3. Because these inventions are distinct for the reasons given above and have acquired a separate status in the art because of their recognized divergent subject matter, restriction for examination purposes as indicated is proper.

4. During a telephone conversation with Regan L. Trumper on May 2, 2002 a provisional election was made without traverse to prosecute the invention of group I (claims 45-51) and group II (claims 2, 4-24, 26-29). Claims 1, 3, 25 and 44 were also examined, because these claims are deemed generic to the invention of groups I and II. Affirmation of this election must be made by applicant in replying to this Office action. Claims 30-43 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

Drawings

5. The drawings are objected to because of the following informalities:

The drawings contain information that is not relevant to the claimed invention. For example, Figures 5-7 and 9 contain information on searching, sorting, displaying, and advancing through stored pulses. This information is not relevant to the claimed invention and should be removed. All of the figures should be reviewed to ensure that information not relevant to the claimed invention is removed.

Appropriate correction is required.

Specification

6. The disclosure is objected to because of the following informalities:

Both the Abstract and the Specification contain information that is not relevant to the claimed invention. For example, the Abstract on lines 4-11, and the Specification on page 41, line 11 through page-62, line 16 contain information on searching, sorting, displaying, and advancing through stored pulses. This information is not relevant to the claimed invention and should be removed. The entire disclosure should be reviewed to ensure that information not relevant to the claimed invention is removed.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8. Claims 1, 3 and 25 are rejected under 35 U.S.C. 102(b) as being anticipated by Battista.

With regard to claim 1, Battista discloses a pulse management system [i.e., multi-channel analyzer (MCA)] (Abstract and col. 9, line 53 to col. 10, line 9) configured to perform a plurality of pulse measurements on each of a plurality of pulses of an acquired signal, and storing results of a plurality of pulse measurements in an accessible data structure (i.e., FIFO buffer) (Figure 5, item 63) with substantially no operator involvement (col. 9 line 53 to col. 10, line 9 and col. 11, lines 45-55).

With regard to claim 3, Battista discloses a pulse database generator for use in a signal measurement system (i.e., multi-channel analyzer) (col. 12, line 57), the pulse database generator constructed and arranged to process acquisition data of an acquired signal in accordance with measurement parameters (i.e., region of interest) (col. 19, lines 45-54 and col. 22, lines 35-37) to generate pulse characteristic data (i.e., pulse heights) (col. 12, line 62) for storage in a pulse data structure (i.e., FIFO butter) (col. 11, line 51), the pulse characteristic data comprising results of a plurality of pulse measurements applied to a plurality of pulses of the acquired signal (col. 11, lines 45-55, col. 12, lines 57-64, col. 19, lines 45-54, and col. 22, lines 35-37).

With regard to claim 25, Battista discloses a computing device having a memory and a computer-readable medium of instructions that, when executed by the computing device (i.e., multi-channel analyzer) (col. 12, line 57), processes acquisition data in accordance with measurement parameters to generate pulse characteristic data for storage in a pulse data structure in memory, the pulse characteristic data comprising results of a plurality of pulse measurements applied to pulses of the acquired signal (col. 11, lines 45-55, col. 12, lines 57-64, col. 19, lines 45-54, and col. 22, lines 35-37).

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

10. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Battista in view of Felps.

As noted above, Battista discloses many features of the claimed invention including a pulse management system implemented in a multi-channel analyzer that performs pulse measurements with substantially no operator involvement (col. 9 line 53 to col. 10, line 9 and col. 11, lines 45-55). Battista does not disclose a pulse management system that is implemented in a digital oscilloscope. Felps discloses automatically acquiring and storing waveform measurements using a measuring instrument such as an oscilloscope (col. 3, lines 59-65). It would have been obvious to one of ordinary skill to modify Battista to implement a pulse management system in a digital oscilloscope, because a digital oscilloscope performs functions similar to a multi-channel analyzer, and Felps teaches that when waveform measurements are made with substantially no operator involvement, as in the case of the disclosed oscilloscope, the operator is free to perform other tasks and the operator's attention need not be diverted from the vicinity of the waveform source during measurement (col. 3, line 65 to col. 4, line 3).

11. Claims 4, 12, 13, 15, 18 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Battista in view of Tsuji et al.

With regard to claims 4 and 26, Battista discloses a histogrammer that samples acquisition data to generate at least one histogram, the histogram comprising a distribution of number of occurrences that the acquired signal attained each of a plurality of signal levels over a certain time range (col. 7, lines 36-53). Battista does not disclose a mode finder that identifies one or more modes of the histogram representing one or more signal levels that occur most frequently in the histogram, each of one or more modes representing a signal level having a logical interpretation. Tsuji et al. discloses a histogram operating circuit for computing histogram features such as mode value (col. 3, lines 40-45). It would have been obvious to one of ordinary skill to modify Battista to include a mode finder that identifies one or more modes of the histogram, because Tsuji et al. teaches that doing so allows for the histogram operating circuit to compute control values such as limiter level (col. 3, lines 48-51).

With regard to claims 12 and 13, Battista discloses a histogram of voltage levels [i.e., pulse heights (pulse energies)] comprising a table stored in memory that lists the quantity of sampled occurrences (i.e., count) said acquired signal attained each of a plurality of signal level value over a certain time range (col. 7, lines 45-52).

With regard to claim 15, Battista discloses an acquired signal comprising two signal levels having a logical interpretation (i.e., difference between "peak" and "baseline" of each pulse is the pulse "height"), and a histogram that is nominally a

bimodal signal level distribution (i.e, the "heights" of the pulses create a histogram) (col. 12, lines 46-56).

With regard to claim 18, Battista discloses a smoothing function to identify one or more modes of a histogram (col. 9, lines 23-28 and col. 15, lines 23-63).

12. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Battista in view of Tsuji et al. and further in view of Felps.

As noted above, Battista in combination with Tsuji et al. disclose certain features of the claimed invention, but do not disclose acquisition memory storing acquisition data pertaining to a plurality of acquired signals, and measurement parameters including a source indication that indicates which of the acquired signals is to be processed by a histogrammer. Felps discloses storing acquisition data in memory (Fig. 1, item 36) for a plurality of measurements and allowing the operator to select which acquired signals are to be processed (i.e., "processed" by the histogrammer disclosed by Battista as noted above) (col. 5, line 61 to col. 6, line 26, col. 7, lines 10-19, and col. 7, line 57 to col. 8, line 4; and also "typical" waveform acquisition: col. 2, lines 1-27). It would have been obvious to one of ordinary skill to modify Battista in combination with Tsuji et al. to store acquired data in memory and then allow the operator to select which acquired signals to process as taught by Felps (and Battista for histogram processing, col. 7, lines 36-53, as noted previously), because Felps teaches that when waveform measurement instruments automatically acquire and store waveform data, the operator is free to perform other tasks during the waveform measurement process (col. 3, line 65

to col. 4, line 3); and because this capability also allows an operator to store multiple waveforms and then return at a later time to processes selected waveforms.

13. Claims 16 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Battista in view of Tsuji et al. and further in view of LaRowe.

Battista in combination with Tsuji et al. disclose certain features of the claimed invention, but do not disclose an acquired signal that is an alternate mark inversion communication signal that transitions between three signal values, and the mode finder identifying three modes in the histogram; and measurement parameters that include an indication of the number of signal levels of the acquired signal. LaRowe discloses an acquired signal that is an alternate mark inversion communication signal that transitions between three signal values (+3v, 0v, -3v) (Fig. 3: "AMI(T1)", and col. 3, lines 1-6). Further, the instant specification, on pages 27 and 28, states that "It should be apparent to those of ordinary skill in the art that mode finder 304 can be configured to identify any number of modes of histogram 312 depending on the type of acquired signal 208". Furthermore, the Examiner takes official notice that there are different types of AMI signals; some are two-level (see U.S. Patent No. 4,503,546) while others are three-level, as noted above. Therefore, it would have been obvious to one of ordinary skill to modify Battista in combination with Tsuji et al. to acquire an alternate mark inversion communication signal that transitions between three signal values as taught by LaRowe, because alternate mark inversion signals are common in data communication systems; and data communication systems commonly require the use of waveform measuring equipment during development and testing phases. Further the instant

specification states that it would be apparent to those of ordinary skill in the art that a mode finder can be configured to identify any number of modes of histogram depending on the type of acquired signal (i.e., AMI signal). Finally, because AMI signals can be both two-level and three-level, it would have been obvious to one of ordinary skill to modify Battista in combination with Tsuji et al. to use measurement parameters that indicate the number of signal levels in an acquired signal, because the application area in which the waveform measurement device is used would determine the number of signal levels (i.e., it would be beneficial to instruct the waveform measuring device to look for a particular number of signal levels, especially in a noisy signal).

14. Claims 5-8, 10, 11, 19-23 and 27-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Battista in view of Tsuji et al. and further in view of Overhage et al.

With regard to claims 5 and 27, Battista in combination with Tsuji et al. disclose certain features of the claimed invention, but do not disclose a transition calculator that determines a transition signal level at each of one or more transition percentages, wherein each of said one or more transition percentages is a percentage of a difference between two of said signal levels having a logical interpretation. Overhage et al. discloses a transition signal level (i.e., output of voltage comparator) at each of one or more transition percentages (i.e., voltage threshold), wherein each of said one or more transition percentages is a percentage of a difference between two of said signal levels having a logical interpretation (i.e., the voltage threshold defines the boundary between two logic states) (col. 3, lines 1-9). It would have been obvious to one of ordinary skill to

modify Battista to determine a transition signal level as noted above, because Overhage et al. teaches that this is a common method for determining logic levels in conventional logic analyzers (col. 3, lines 1-9).

With regard to claim 6, 7, 23, 28 and 29, Battista in combination with Tsuji et al. disclose certain features of the claimed invention, including performing pulse measurements including maximum voltage (i.e., "pulse height analysis": Battista; col. 7, lines 13-20), but do not disclose determining transition times at which each pulse attains each of said transition signal levels; and using the transition times and pulse type indication to perform pulse measurements. Overhage et al. discloses determining transition times at which each pulse attains each of said transition signal levels (col. 5, lines 29-32 and col. 6, line 67 to col. 7, line 1). Overhage et al. also discloses using pulse type indication (i.e., "multi-bit digital samples that are representative of the amplitude of the input signal over time) (col. 5, lines 25-28) (i.e., "amplitude" necessarily indicates pulse polarity or "pulse type"). It would have been obvious to one of ordinary skill to modify Battista and Tsuji et al. to determine transition times at which each pulse attains each of the transition signal levels, as taught by Overhage et al., because Overhage et al. teaches a way to improve the time resolution of logic state transitions over conventional logic analyzers (col. 6, lines 46-48). Further, it would have been obvious to one of ordinary skill to modify Battista and Tsuji et al. to using pulse type indication (i.e., amplitude) to perform pulse measurements, because pulse polarity (i.e., amplitude) is necessary to determine the logical state of an acquired signal.

With regard to claim 8, Battista discloses a plurality of pulse measurements that are predetermined (i.e., a programmable baseline shifter automatically stabilizes baseline to within a prescribed range of voltages) (col. 8, lines 8-17).

With regard to claim 10, Battista discloses measurement parameters that are provided by the operator (i.e., a user-defined region of interest) (col. 19, lines 18-25).

With regard to claims 11, 22 and 19, Battista in combination with Tsuji et al. disclose certain features of the claimed invention including signal levels that are provided by the operator (i.e., a dynamic range that can be positioned and specified by the operator from baseline to peak/maximum height) (col. 6, lines 56-64), but do not disclose a transition calculator that determines a transition signal level at each transition percentage based on one or more signal levels for each logical state of the pulse in the acquired signal including a top signal level and base signal level. Overhage et al. discloses a transition signal level (i.e., output of voltage comparator) at each transition percentage (i.e., voltage threshold) (col. 3, lines 1-9) based on one or more signal levels for each logical state of the pulse in the acquired signal including a top signal level and a base signal level [i.e., dual threshold consisting of a low threshold (i.e., base signal level) and high threshold (i.e., top signal level)] (col. 7, lines 33-41). It would have been obvious to one of ordinary skill to modify Battista to determine a transition signal level as noted above, because Overhage et al. teaches that this is a common method for determining logic levels in conventional logic analyzers (col. 3, lines 1-9).

With regard to claims 20 and 21, Battista in combination with Tsuji et al. and Overhage et al. disclose certain features of the claimed invention, but do not disclose

setting transition percentages to ten, 50 and 90 percent of the difference between the top signal level and the base signal level. However, it would have been obvious to one of ordinary skill to select values for these thresholds (i.e., transition percentages) as a matter of engineering design, because the values of these percentages will vary depending on the application area in which the signals are being measured (i.e., for example, how much noise energy is present) and the only way to determine which values will work best for a particular application area is through experimentation and optimization.

15. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Battista in view of Tsuji et al. and further in view of Coulson et al.

Battista in combination with Tsuji et al. disclose certain features of the claimed invention, but do not disclose performing statistical analyses on pulse measurement results. Coulson et al. discloses performing statistical analyses on measurement results (col. 3, lines 4-9). It would have been obvious to one of ordinary skill to modify Battista and Tsuji et al. to perform statistical analyses on measurement results as disclosed by Coulson et al., because Coulson et al. teaches that doing so allows for both measurement values and statistical results to be displayed (col. 3, lines 4-9) which would save time and provide a consolidated display of information during troubleshooting activities.

16. Claim 24 is rejected under 35 U.S.C. 103(a) as being unpatentable over Battista in view of Felps.

Battista discloses certain features of the claimed invention, but does not disclose a signal measurement system that is a digital oscilloscope, although Battista does disclose a multi-channel analyzer. Felps discloses acquiring and storing waveform measurements using a measuring instrument such as an oscilloscope (col. 3, lines 59-65). It would have been obvious to one of ordinary skill to modify Battista to acquire and store waveform measurements using a measuring instrument such as an oscilloscope, (i.e., digital oscilloscope), because digital oscilloscopes are conventionally used to perform measurements of various types of signals including pulses.

17. Claims 44-48 and 51 are rejected under 35 U.S.C. 103(a) as being unpatentable over Battista in view of Tsuji et al. and further in view of Overhage et al. and van den Engh et al.

With regard to claim 44, as noted above, Battista in combination with Tsuji et al. disclose certain features of the claimed invention including using acquisition data to perform pulse measurements and storing the acquired data (i.e., samples of the pulse data signal) in a generated data structure (i.e., FIFO buffer) (Battista: col. 7, lines 13-20). Battista in combination with Tsuji et al. do not disclose using transition times and pulse type indication to perform pulse measurements; and assigning a unique identifier to each pulse of the acquired signal.

Overhage et al. discloses determining transition times at which each pulse attains each of said transition signal levels (col. 5, lines 29-32 and col. 6, line 67 to col. 7, line 1). Overhage et al. also discloses using pulse type indication (i.e., "multi-bit digital samples that are representative of the amplitude of the input signal over time")

(col. 5, lines 25-28) (i.e., "amplitude" necessarily indicates pulse polarity or "pulse type"). Also, van den Engh et al. discloses assigning a unique identifier to each pulse of the acquired signal (Abstract, col. 3, lines 14-16 and col. 9, line 50 to col. 10, line 16).

It would have been obvious to one of ordinary skill to modify Battista and Tsuji et al. to use the transition times, as determined by Overhage et al., to perform pulse measurements, because Overhage et al. teaches a way to improve the time resolution of logic state transitions over conventional logic analyzers (col. 6, lines 46-48). Further, it would have been obvious to one of ordinary skill to modify Battista and Tsuji et al. to using pulse type indication (i.e., amplitude) to perform pulse measurements, because pulse polarity (i.e., amplitude) is necessary to determine the logical state of an acquired signal. Finally, It would have been obvious to assigning a unique identifier to each pulse of an acquired signal, as taught by van den Engh et al., because when more than one pulse is stored, it is necessary to provide a mechanism to allow access to each individual pulse, much the same way that data in a conventional databases is accessed, i.e., by a unique identifier.

With regard to claims 45 and 48, as noted above with regard to claim 44, Battista in combination with Tsuji et al. disclose certain features of the claimed invention including using an indication of the type of pulse train embodied in an acquisition signal, and using/determining transition times, but do not disclose using/determining transition signal levels and global transition signal levels at one or more transition percentages between a top signal level and a base signal level. Overhage et al. discloses a transition signal level (i.e., output of voltage comparator) at each transition percentage

(i.e., voltage threshold) (col. 3, lines 1-9) based on one or more signal levels for each logical state of the pulse in the acquired signal including a top signal level and a base signal level [i.e., dual threshold consisting of a low threshold (i.e., base signal level) and high threshold (i.e., top signal level)] (col. 7, lines 33-41). It would have been obvious to one of ordinary skill to modify Battista to use/determine a transition signal level as noted above, because Overhage et al. teaches that this is a common method for determining logic levels in conventional logic analyzers (col. 3, lines 1-9). Furthermore, it would have been obvious to receiving/using a global transition signal level, because using one transition signal level would save processing time since the calculation to determine the transition signal level (in this case a global transition signal level) would not have to be performed for each signal acquisition (i.e., the number of calculations is reduced).

With regard to claims 46 and 47, as noted above, Battista in combination with Tsuji et al., Overhage et al. and van den Engh et al. disclose many features of the claimed invention including generating at least one histogram of acquisition data (Battista: col. 12, lines 46-64); determining top, base and other voltage levels (Overhage et al.: col. 3, lines 1-9) and calculating transition voltages at each of the transition percentages relative to the top and base voltages (Overhage et al.: col. 7, lines 33-41). Battista in combination with Tsuji et al., Overhage et al. and van den Engh et al. do not disclose receiving transition percentages; or determining top, base and other voltage levels *based on modes of the histogram and pulse train type.* It is necessarily the case that transition percentages will vary based on the application area in which the signals are being measured, and as a matter of engineering design choice; therefore, it would

have been obvious to one of ordinary skill to have the measurement instrument receive transition percentages, which may need to be adjusted for the type and quantity of noise present in a particular signal. Further, it would have been obvious to determine top and base voltages *based on the modes of the histogram*, because Battista discloses a histogram based on a database of pulse heights (col. 12, lines 61-64) (i.e., top and base voltages are readily apparent and easily calculated); and also based on *pulse train type,* because pulse train type will already have been accounted for in the construction of the histogram.

With regard to claim 51, as noted above, Battista in combination with Tsuji et al., Overhage et al. and van den Engh et al. disclose many features of the claimed invention, but do not disclose the pulse train type provided by the operator. As noted previously, it is common for noise to be present in signals that are to be measured. For this reason, it is desirable for the operator to have the ability to indicate before a measurement is made, the pulse train type, in order to tune the measurement instrument in preparation for the type and quality of signal that will be measured. Therefore, it would have been obvious to one of ordinary skill to modify Battista in combination with Tsuji et al., Overhage et al. and van den Engh et al. to allow the operator to provide a pulse type, because this type of information may be useful for the measurement device to configure itself for the type of signal which is about to be measured.

18. Claims 49 and 50 are rejected under 35 U.S.C. 103(a) as being unpatentable over Battista in view of Tsuji et al., Overhage et al. and van den Engh et al. and further in view of Felps.

With regard to claim 49, Battista in combination with Tsuji et al., Overhage et al. and van den Engh et al. disclose many features of the claimed invention, but do not disclose receiving an indication of which of a plurality of channels is to be the source of acquisition data. Felps discloses allowing the operator to indicate which of a plurality of channels is to be the source of acquisition data (col. 7, line 57 to col. 8, line 4). It would have been obvious to one of ordinary skill to modify the combination of Battista, Tsuji et al., Overhage et al. and van den Engh et al. to receive an indication by allowing the operator to indicate which of a plurality of channels is to be the source of acquisition data as taught by Felps, because when more than one channel is available in a signal measurement device, it is necessarily the case that a means be provided for indicating which channel is to be used as the instant source of acquisition data.

With regard to claim 50, Battista in combination with Tsuji et al., Overhage et al. and van den Engh et al. disclose many features of the claimed invention, but do not disclose a subset of pulses comprising all or less of the pulses chosen for analysis by the operator. The instant specification on page 2, in a discussion of "related art", teaches enabling the operator to capture and display the desired portion (i.e., pulses) of an acquired input signal. It would have been obvious to one of ordinary skill to modify Battista in combination with Tsuji et al., Overhage et al. and van den Engh et al. to make use of a subset of pulses comprising all or less of the pulses chosen for analysis

by the operator, because selecting a subset of pulses of an acquired waveform is a conventional practice in the art.

Conclusion

19. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Jonker et al. discloses an oscilloscope display for a digital engine analyzer that digitizes and captures digital peak ignition voltage values, stores values over a number of successive engine cycles and displays a histograph of the voltage levels.

Alexander discloses automatically performing waveform measurements and a graphical user interface that allows for the selection of measurement parameters for a selected displayed waveform.

Rosenbush et al. discloses recording captured pulse data and correlating the recorded waveshapes to identify a causal engine event including history samples which occur before a record-starting threshold crossing.

Pederson et al. discloses a correlation method and system for identifying sequences of pulses.

Kristof et al. discloses a waveform measuring and analyzing instrument including a digital memory unit which stores waveform data and is constructed with a plurality of arrays, and each array includes a set of block modifying registers, including a multiple register and an offset register.

Power discloses a digital instrument for performing digital measurements that are stored in a history file in a RAM, linearly processing the stored measurements, and displaying the features of the measurements on an oscilloscope.

Miller discloses a digital storage oscilloscope including local memory comprising arrays of storage locations; and correlating data from primary measurements and derived parameters stored in separate arrays.

Dagostino et al. discloses a waveform storage and display system useful in digital oscilloscopes that automatically stores acquired waveform data.

Yoshine et al. discloses a two-level alternate mark inversion signal transmission system that converts binary pulses of "1" and "0" levels into a pulse signal.

20. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Timothy R. Stampf whose telephone number is 703-305-3339. The examiner can normally be reached on Monday-Friday (8:00-5:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Marc S. Hoff can be reached on 703-308-1677. The fax phone numbers for the organization where this application or proceeding is assigned are 703-305-3431 for regular communications and 703-308-7725 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

trs
May 9, 2002

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